



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| | | | | |
|--|-------------|----------------------|---------------------------------|-----------------------------|
| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
| 10/501,772 | 04/25/2005 | Ulrich Bockelmann | 255977US2PCT | 8420 |
| 22850 7590 06/19/2007 OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314 | | | EXAMINER CROW, ROBERT THOMAS | |
| | | | ART UNIT 1634 | PAPER NUMBER |
| | | | NOTIFICATION DATE 06/19/2007 | DELIVERY MODE ELECTRONIC |

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentdocket@oblon.com
oblonpat@oblon.com
jgardner@oblon.com

| | | | |
|------------------------------|--------------------------------------|--|--|
| Office Action Summary | Application No. 10/501,772 | Applicant(s) BOCKELMANN ET AL. | |
| | Examiner Robert T. Crow | Art Unit 1634 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-3 is/are rejected.
- 7) ☒ Claim(s) 4-17 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date <u>7/2004</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Preliminary Amendment

1. The Preliminary Amendments filed 20 July 2004 and 25 April 2005 and have been acknowledged and entered.

Claim Objections

2. Claims 4-17 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim cannot depend upon other multiple dependent claims. For example, claim 4 is drawn to a "method as claimed in one of the preceding claims." However, preceding claim 3 is drawn to "either of the preceding claims;" thus, claim 4 is an improper multiple dependent claim. See MPEP § 608.01(n).

Accordingly, claims 4-17 have not been further treated on the merits.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-3 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

A. Claims 1-3 are indefinite in claim 1, which recites each of the following:

I. The limitations "transistors (T1, T2, etc.)" in line 5, "region (S), a drain region (D)" in line 6, "zone (3)" in line 7, "zones (3)" in lines 10 and 18, and "solution (6)" in line 14 of claim 1. It is unclear if the various recitations within the parenthesis are limitations of the claim. Furthermore, for the term "transistors (T1,T2, etc.)" the metes and bounds of the term are unclear due to the recitation of "etc."

Art Unit: 1634

II. The limitation "said active zone" in line 7 of claim 1. The recitation "a said active zone" lacks antecedent basis in the "active zones" of line 3 of claim 1. It is suggested that "a said active zone" be amended to read "one of said active zones."

III. The limitation "said zones" in line 10 of claim 1. The recitation "said zones" lacks antecedent basis in the "active zones" of line 3 of claim 1. It is suggested that "said zones" be amended to read "said active zones."

IV. The limitation "said probes" in line 12 of claim 1. The recitation "said probes" lacks antecedent basis in the "molecular probes" of line 12 of claim 1. It is suggested that "said probes" be amended to read "said molecular probes."

V. The limitation "these zones" in line 12 of claim 1. It is unclear if "these zones" refers to "active zones" or "some of said zones."

VI. The limitation "the drain current/source-gate voltage/source-drain voltage" in line 14 of claim 1. It is unclear whether current or voltage that is being measured. It is also unclear which of the source, gate, and/or drain has the current or voltage measured. In addition, the recitation "the drain current/source-gate voltage/source-drain voltage" lacks antecedent basis because a "drain current/source-gate voltage/source-drain voltage" is not previously recited. It is suggested that the word "the" be changed to "a."

VII. The limitation "the transistors" in line 17 of claim 1. The recitation "the transistors" lacks antecedent basis in the "field-effect transistors" of line 4 of claim 1. It is suggested that "the transistors" be amended to read "the field-effect transistors."

B. Claim 2 is indefinite in each of the following:

I. The limitation "the characteristic uses" in line 3 of claim 2. The recitation "the characteristic uses" lacks antecedent basis because there is no prior recitation of "characteristic uses." It is suggested the word "the" be removed. In addition, it is unclear what steps of the instantly claimed

Art Unit: 1634

method are encompassed by the limitation "characteristic uses" because no active steps are recited as part of the "characteristic uses." It is suggested that the claim be amended to recite only those active steps that are part of the instantly claimed method.

II. The limitation "said measurement" in line 2 of claim 2. The recitation "said measurement" lacks antecedent basis in the "measuring" of claim 1. It is suggested that "said measurement" be amended to read "said measuring."

III. The limitation "the drain" in line 4 of claim 2. The recitation "the drain" lacks antecedent basis in the "drain region" of the field-effect transistors of claim 1. It is suggested that "the drain" be amended to read "a drain region."

IV. The limitation "the source" in each of lines 4 and 7 of claim 2. The recitation "the source" lacks antecedent basis in the "source region" of the field-effect transistors of claim 1. It is suggested that "the source" be amended to read "a source region."

V. The limitations "voltage (U_{DS})" in line 4, "voltage (U_{GS})" in line 7, and in "current (I_D)" in line 9 of claim 2. It is unclear if the various recitations within the parenthesis are limitations of the claim.

VI. The limitation "the gate" in line 7 of claim 2. The recitation "the gate" lacks antecedent basis in the "gate region" of the field-effect transistors of claim 1. It is suggested that "the gate" be amended to read "a gate region."

C. It is suggested that non-examined claims 4-17 be carefully reviewed by Applicant to correct any indefinite recitations similar to those presented above.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1 -3 are rejected under 35 U.S.C. 102(a,e) as being anticipated by Holm-Kennedy (U.S. Patent No. 5,466,348, issued 14 November 1995).

Regarding claim 1, Holm-Kennedy teaches a method for detecting at least one parameter representative of molecule probes fixed to active zones. In a single exemplary embodiment, Holm-Kennedy teaches a sensor consisting of a network of field-effect transistors; namely, Figure 5, which shows an array of sensors (column 9, lines 24-30), wherein the sensors are field effect transistors (i.e., FETs; column 7, lines 20-35). A FET has a source region, a drain region, and a gate region; namely, elements 53, 55, and channel 56, respectively, of Figure 2B (column 7, lines 20-45); thus, each FET of the sensor array has the required regions, and each gate region is an active zone.

Holm-Kennedy further teaches bringing some of said zones into contact with molecular probes in order to fix said probes; each active zone of sensors 50A-E has a different receptor 66 attached thereto (column 9, lines 24-35). The receptors 66 are bound to molecular probes 64; the complexes thus formed are the instantly claimed molecular probes, which are fixed to the sensor and bind to (i.e., are molecular probes for) conjugated receptors 116 (Figure 8D and column 24, lines 19-35). Holm-Kennedy et al teach the attachment of the molecular probes is done under wet conditions with a buffered (i.e., electrolyte) test solution (column 14, lines 42-64); the test solution bathes at least the zoned contacted with the molecular probes because the molecular probes are in the test solution.

Holm-Kennedy also teaches measuring at least one point of the drain current/source-gate voltage/source-drain voltage characteristic of at least two of the transistors of a first group corresponding

Art Unit: 1634

to zones brought into contact with molecular probes so as to deduce at least one said parameter by comparison of at least two measurements obtained for two different zones; namely, source drain-voltage for constant source-drain current is used as a reference parameter for a preattachment condition, which provides a measure of attachment at each of the zones (column 10, lines 9-39).

Regarding claim 2, Holm-Kennedy teach the method of claim 1, wherein the measurement uses the application of a given voltage between the drain and the source of at least said transistors of the first group and also the application of a given drain current to these transistors of the first group; namely, the reference parameter is a source-drain voltage for constant source-drain current (column 10, lines 9-39).

Regarding claim 3, Holm-Kennedy teaches the method of claim 1, wherein a rinsing step is performed between fixing the probes and bathing the probes in electrolyte solution; namely, the sensor is rinsed after molecular probe 64 is fixed to sensor receptor 66 and then tested (i.e., retested; column 23, line 47-column 24, line 3).

Conclusion


7. No claim is allowed.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert T. Crow whose telephone number is (571) 272-1113. The examiner can normally be reached on Monday through Friday from 8:00 am to 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ram Shukla can be reached on (571) 272-0735. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1634

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


RAM R. SHUKLA, PH.D.
SUPERVISORY PATENT EXAMINER

Robert T. Crow
Examiner
Art Unit 1634

